

**CARTON AND CARTON BLANK WITH REINFORCED TOP**Background of the Invention

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The present invention relates to a carton for containing a plurality of similar articles, such as bottles and a means for retaining the bottles within the carton and in particular to a means of accessing the articles.

10 Cartons for encasing multiple articles are useful for enabling consumers to obtain and transport a desired quantity of individual articles such as soft drinks or other beverages. Such cartons need to be strong enough to support multiple articles, especially if the articles are bottles. It is also desirable for such cartons to be easy to handle and portable.

15 It often desirable for the articles contained within the carton to be displayed and also for the carton to have large areas which can be printed with advertising graphics. It is also often desirable for the articles to be easily accessible and it is also preferable for the articles to be secured in place within the carton, especially if the articles are fragile, for example glass bottles. It is however undesirable for articles to be accessed too easily, for example, before  
20 being purchased.

It is also desirable to have a carton which after the contents of the articles have been consumed can be used to return the empty articles to a recycling point.

25 The present invention seeks to provide a means for displaying the articles or a portion of the articles in combination with an access means for removal of the articles where the access means leaves the carton with sufficient integrity for replacement of articles for the purpose of returning to a recycling point.

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Summary of the Invention

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According to a first aspect of the invention, in a carton of the type comprising an open top container and a separate top closure, the upper periphery of the open top container is reinforced around the perimeter by reinforcing panels hinged along an edge of the upper periphery, wherein the top closure is releasable from the open top container.

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Preferably the reinforcing panels are hinged to at least one adjacent reinforcing panel. The top closure may be at an elevation below that of an upper extremity of the open top container when the carton is in use.

10 Alternatively the top closure is at an elevation substantially equal to that of a lower extremity of the reinforcing panels when the carton is in use. The carton may further comprise at least one reinforced handle aperture struck from one of said opposing walls, the arrangement being such that the handle apertures are located at an elevation above the top panel.

15 Preferably the top closure comprises apertures for receiving articles or a portion thereof, wherein each aperture has a frangible connection with at least one other aperture to facilitate removal of the articles. The carton may retain sufficient structural integrity such that it can be re-used for returning empty articles.

20 According to a second aspect of the invention, a two part blank comprising a first part that forms an open top container and a second part which forms a top closure, the first part comprises reinforcing panels hinged along an upper edge of the open top container, which reinforce the upper periphery of the open top container in a carton in a setup condition, wherein the top closure is releasable from the open top container.

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Preferably the top panel comprises apertures for receiving the articles or a portion thereof, wherein each aperture has a frangible connection with at least one other aperture to facilitate removal of the articles. The carton may further comprise at least one reinforced handle aperture being struck from one of said opposing walls.

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#### Brief Description of the Drawings

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Exemplary embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which;

Figure 1A illustrates a first part of a blank for forming a carton according to a first  
5 embodiment of the invention;

Figure 1B illustrates a second part of a blank for forming a carton according to a first embodiment of the invention;

10 Figure 2 is a perspective view from the front, side and top of a carton being constructed from the blanks of Figs. 1A and 1B;

Figure 3 is a perspective view from the front, side and top of a carton constructed from the blanks of Figs 1A and 1B.

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#### Detailed Description of the Preferred Embodiments

Figs. 1A and 1B, show a first and second part of a two-part blank respectively for forming a carton 30, made from paperboard or similar foldable sheet material. It is envisaged that a  
20 unitary blank could be used instead, without departing from the scope of the invention. In the first embodiment of the invention two blanks 10 and 20, of Figs. 1A & 1B are formed into a tubular crate and a cover respectively. The cover is inserted into the tubular crate to form the carton 30 of the first embodiment, which is shown in Fig. 1C.

25 In the embodiments to be described the carton 30 is of the fully enclosed type, although it will be recognised that the invention could be applied to a crash bottom carton without departing from the scope of the invention. The invention is designed to receive similar articles, such as bottles, but it is envisaged that the present invention could be used to contain other articles, without departing from the scope of the invention.

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Turning to Figure 1A, the blank 10 comprises a first side wall 12, a front panel 14, a second side wall 16 and a back panel 18, hingedly connected one to the next in series along fold lines

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42, 44, 46 and 48 respectively. Handle apertures 54 are struck from the first and second side walls 12, 16. Finger gripping tabs 58 protrude inward from the upper edges of the handle apertures 54. The finger gripping tabs enable the erected carton to be easily grasped and lifted by the handle apertures 54.

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The blank further comprises bottom end flaps 72 and 74 hingedly connected to each of the first and second side walls 12, 16 along fold lines 62 and to each of the front and back panels 14, 18, along fold lines 64. The bottom end flaps 72, 74 provide a bottom end closure means when the blank is erected into a carton. It is envisaged that other bottom end closure means could be used without departing from the scope of the invention.

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Top end flaps 76, 96 are also provided and are hingedly connected to each of the first and second side walls 12, 16 and the front and back panels 14, 18 along fold lines 68 and 66 respectively. The top end flaps 76, 96 are hingedly connected one to another and can provide reinforcement to the top edges of the first and second side walls 12, 16 and the front and back panels 14, 18 when the blank is erected into the carton 30. The top end flaps 76, 96 can also be used to secure the cover formed from blank 20 within the carton without the need for adhesive. The blank 10 also comprises a glue flap 88 which is hingedly connected to the back panel 18, along fold line 48.

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Turning to the construction of the tubular crate from blank 10, a series of sequential folding and gluing operations are required, which preferably can be performed in a straight line machine, so that the crate and/or blank 10 are not required to be rotated or inverted to complete the construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements.

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The first stage is to apply glue to the outside edge of glue flap 88 and then fold it 180° about fold line 48 so that it lies in flat face contacting relation with the inside face of back panel 18. The front panel 14 is then folded about fold line 44 to lie flat on top of the inside face of second side panel 16. This causes the first side panel 12 to come into flat face contacting relation with the back panel 18 and the glued outer edge of glue flap 88, so that the first side panel 12 becomes stuck to the glue flap 88, thus connecting the first side panel 12 and back

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panel 18. The blank 10 can then be erected into a tubular structure and using a similar series of folding and gluing steps, the bottom end flaps 72, 74 can be secured to form a bottom end closure means.

5 A second blank 20 is shown in Figure 1B, which can be formed into a cover for the tubular crate formed from the blank 10 of Figure 1A. The blank 20 comprises a main panel 22, which is, on either side, hingedly connected to cover end flaps 28a and 28b along fold lines 38a and 38b respectively. The cover end flaps 28a and 28b can provide structural rigidity as well as aesthetic appeal to the carton 30, when assembled.

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The main panel 22 further comprises apertures 56 for receiving the similarly configured articles and each aperture is connected to at least one other aperture by a frangible connection or nick 37. In this first embodiment the apertures 56 are arranged in four rows and each aperture 56 is connected to at least one other aperture 56 of the same row by a frangible  
15 connection or nick 37. In other embodiments of the invention the arrangement of the apertures 56 or frangible connections or nicks 37 may differ from that described in the first embodiment of the invention. It is envisaged that many arrangements could be used without departing from the scope of the invention.

20 Once the tubular crate has been loaded with the bottles or other similar articles, the blank 20 is folded to form a cover. To ensure that the cover flaps 28b do not obscure the handle apertures 54 when the cover formed from the blank 20 is inserted into the tubular crate, the cover flaps 28b are folded downward out of the plane of main panel 22 and are obscured from view when the carton 30 is fully erected. The cover flaps 28a can be folded either  
25 upward or downward out of the plane of main panel 22 and may or may not be secured to the tubular crate by use of glue.

The folded blank 20 is then inserted into the loaded carton so that the apertures 56 of the main panel 22 are brought into registry with the bottle necks. If the cover flaps 28a are folded  
30 upward out of the plane of the main panel 22 then the cover formed from the blank 20 may be locked within the tubular carton by folding the top end flaps 76 and adjacent inner handle panels 96 about fold lines 66 and 68. This action may lock the cover within the tubular crate

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such that the cover flaps 28a are in flat face contacting relationship between top end flaps 76 and an adjacent upper portion of the front and back panels 14, 18.

The carton formed from the blanks 10 and 20 is shown in Figure 1C. It can be seen that the  
5 bottles are secured within the carton, once the cover made from blank 20 has been secured inside the tubular crate. Access to the bottles is gained by separating the frangible connections or nicks 37. This may be achieved simply by pulling out a bottle contained within the carton 30. In this way each bottle can be accessed individually, whilst the structural integrity of the carton 30 is maintained. Bottles not removed are held in position by  
10 the apertures 56 and the main panel 22. Therefore the carton provides an adaptable carrying container, the structural integrity of which is not destroyed when the bottles are accessed. This enables the carton to be reused for the convenient returning of the empty bottles. In this embodiment of the invention, when all bottles are removed, no material from the cover formed from blank 20 is actually removed from the carton 30.

15 In other embodiments of the invention the apertures formed within the top panel may not be circular and may also be provided with additional tabs protruding into the aperture, to aid retention of the bottle necks or other articles contained within the carton.

20 The present invention and its preferred embodiments relate to an arrangement for providing a top closure in an open top container. However, it is anticipated that the invention can be applied to a variety of carriers and is not limited to those herein before described and could be used for numerous applications for example a crash bottom carton.

25 It will be recognised that as used herein, directional references such as "top", "bottom", "front", "back", "end", "side", "inner", "outer", "upper" and "lower" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only; indeed it is envisaged that hinged connection can be formed from  
30 one or more of the following, a score line, a frangible line or a fold line without departing from the scope of the invention.